14. (amended) A method for sequencing a plurality of tasks performed or controlled by a computer comprising:

a) displaying on a computer display a user interface having [a] an at least two-dimensional directional field;

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b) placing in response to user input, task objects in said directional field, wherein said task objects represent the tasks to be performed by said computer;

c) selecting, by a user, a directional attribute for said directional field;

d) sequencing, by said computer, of one or more of the task objects in the directional field based on the relative spatial location of the task objects in the directional field and the directional attribute of the directional field.

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29. (amended) A method for sequencing a plurality of tasks performed or controlled by a computer, comprising:

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a) placing task objects in a directional field having at least two dimensions and a user-changeable directional attribute, wherein said task objects represent the tasks to be performed by said computer; and

b) sequencing, by said computer, of one or more of the task objects in the directional field based on the relative spatial location of the task objects in the directional field and the directional attribute of the directional field.

Remarks

Applicant has amended independent claims 1 and 14 to more particularly identify the directional field of the present invention as claimed – specifically, the limitation of at least a two-dimensional field has been added. Claim 29 has been amended to incorporate the limitation of a user-changeable directional attribute.

The present invention provides a graphical method for sequencing computer-controlled tasks. Tasks, represented as objects in a graphical user interface, are placed by the user in a two- or three-dimensional directional field. The user additionally controls a directional attribute that specifies how the order of the tasks within the field is determined. Upon initiation by the user, the tasks are automatically sequenced by the computer based on the relative location of the associated graphical objects in the directional field with respect to one another and the directional attribute. The user may alter the sequence of execution of the tasks by changing the relative location of one or more objects, and/or by changing the directional attribute. As the tasks are executed, graphical links are drawn between the associated objects. Thus, the ordering of task execution is specified by a graphical pattern, transcending the language and cultural limitations of the prior art task ordering methods, such as programming languages and scripts.

The Examiner rejected independent claims 1 and 14 under 35 U.S.C. 103(a) as being unpatentable over Carlson *et al.* in view of Ingalls *et al.* U.S. Patent 5,623,592 to Carlson *et al.* (hereinafter, "Carlson") discloses a method of automating an experiment involving computer-controlled devices by specifying the devices, their sequence of operation, data flow, data formatting, report generation, and the like using graphical icons. Associated with a scheduler icon is a scheduler window, containing a one-dimensional time line. Iconic representations of devices and operations may be placed on the time line. The order of execution of the operations is determined by the relative placement of the icons on the time line. Once initiated, execution of operations proceeds in a linear fashion in single, predetermined direction. The time line may be oriented horizontally or vertically.

The time line of Carlson (the "icon sequence region 806") is a one-dimensional, linear field, and execution proceeds along the time line in a predefined sequential direction. Claims 1 and 14 have been amended herein to recite the limitation of a directional field having at least two dimensions. The spatial associations between task objects, as imparted by the directional attribute, may be much more sophisticated in two or more dimensions than along a one-

dimensional time line. Indeed, the graphical paradigm of task sequencing enabled by the present invention – the substitution of innate pattern recognition for the linguistically and culturally bound textual solutions of the prior art – is fully realized in a two-dimensional or greater sequencing directional field, wherein complex patterns of task execution sequencing may be constructed.

The Examiner correctly noted that "Carlson does not explicitly teach the limitation of a user changeable directional attribute," and relied on Ingalls for that teaching. Ingalls does not teach a user-changeable directional attribute for altering the ordering of objects in an associated directional field. "Fabrik: A Visual Programming Environment," by Ingalls *et al.* (hereinafter "Ingalls"), describes a programming language wherein simple computer programs may be constructed by graphically connecting visual objects representing programming primitives, constructs, and dataflow paths. Section 4 of Ingalls describes the bidirectionality of dataflow links between Fabrik program elements.

Nothing in Ingalls discloses or suggests a directional field with a user-changeable directional attribute. Ingalls discloses placing graphic objects on a background. The background has no directional property associated with it, and has no influence whatsoever on the interconnection of visual programming objects placed on the background. Further, there is no directional attribute or property associated with the background that can be changed by the user. The background in Ingalls performs the same function as a blank sheet of paper. It provides a workspace on which objects may be placed, but does not interact with or affect the objects on workspace. In short, Ingalls does not teach any directional attribute that controls sequencing of objects in a directional field, much less a user-controllable directional attribute.

If anything, Ingalls teaches away from Applicant's invention. Ingalls teaches that blocks or programming elements in the Fabrik language are explicitly linked together by the user – whether with uni-directional or bi-directional dataflow links. As discussed in Applicant's specification, one distinction of the present invention over prior art graphic task scheduling systems is that the user need not explicitly link together task objects at all. The objects are

automatically linked together by the computer as the associated tasks are executed, based on their relative location within a directional field and the state of the user-controlled directional attribute. The links automatically generated are sequential.

Finally, the bi-directional links disclosed by Ingalls are not a directional attribute as set forth in the claims. First, the bi-directional links are not truly bi-directional. "The key observation about most uses of bidirectionality is that they are simply a shorthand for multiple paths of dataflow. [In most cases] the different paths may be treated completely independently." Ingalls, p. 180, col. 2, ll. 10-15. What are presented to the user at the graphical level as bi-directional links are implemented as separate, complimentary data paths. Even if they were true bi-directional links under the user's control, however, the disclosure of Ingalls would still fail to teach Applicant's user-controlled directional attribute. The user-controlled directional attribute of the present invention is an attribute of the directional field or workspace in which task objects are placed and spatially located relative to each other. It controls the automatic sequencing of the task objects in the directional field by the computer. Applicant's user-controlled directional attribute has nothing to do with dataflow paths between program modules; the "bi-directional" dataflow links of Ingalls have nothing to do with a directional attribute of the background in which the program modules are placed. Neither suggests the other.

Ingalls thus fails to teach or suggest a user-controlled directional attribute for a directional field that controls the sequencing of execution of task objects placed in the directional field. Claims 1 and 14 are thus patentably non-obvious over the combination of Carlson and Ingalls, and are hence in form for allowance.

Dependent claims 2-13 and 15-25 depend from claims 1 and 14, respectively, and contain all limitations of the independent claims. As such, the dependent claims are also patentably non-obvious over the cited combination, and are in form for allowance.

Independent claim 29 has been amended herein to incorporate the limitation that the directional attribute associated with the directional field is user-changeable. Neither Carlson nor Keller *et al.* teach or suggest the control of execution sequence of tasks represented by task

objects in a directional field by modification of a user-controlled directional attribute. For the reasons discussed above, claim 29 is thus patentable and in form for allowance. Claims 30-41 depend from claim 29 and include all limitations of the independent claim. As such, claims 30-41 are also patentable over the cited references, and are in form for allowance.

Prompt allowance of all pending claims is respectfully requested.

Respectfully submitted,

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